Space Weather Forecast

Issued on Friday, 03 February 2023 at 12:39 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Slight chance of Moderate solar activity throughout. Slight chance of G1/Minor Storm, mainly on Days 3 and 4 (05-06 Feb).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Activity has been Low, with isolated minor Common-class flares in the past 24 hours. There are currently five sunspot regions on the disc. All of these are small and magnetically simple, although some minor development has been observed. No Earth-directed Coronal Mass Ejections (CMEs) have been seen in available imagery.

Solar Wind / Geomagnetic Activity: Solar wind parameters have shown the recent coronal hole fast wind waning to background levels, with a possible CME arrival at 03/1050 UTC. Wind speeds have declined from slightly elevated levels near 420 km/s to slow levels around 340-370 km/s. The total Interplanetary Magnetic Field strength was weak before jumping to moderate as the CME arrived, with the north-south component varying weakly. Geomagnetic activity was Quiet (Kp 0-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low activity is forecast with the sunspots on the visible disc currently small and relatively simple. There is a slight chance of Moderate class flares.
Solar Wind / Geomagnetic Activity: The recent weak CME arrival is likely to have been that launched on the 30 Jan, with minor CME effects likely continuing through the coming 24 hours. Wind speeds are currently at slow levels, and are expected to remain so through Days 1 and 2 (03-04 Feb). The next feature of interest is a further coronal hole which is likely to bring elevated wind speeds. It currently seems most likely to arrive on Day 3, but with significant uncertainty in this.
Geomagnetic activity is expected to be mainly Quiet to Unsettled throughout. There is a chance of Active intervals and a slight chance of a G1/Minor Storm interval, most likely on Day 1 with the current weak CME effects and on Days 3 or 4 as the HSS arrives.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to be at background levels with no solar radiation storms occurring.

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Met Office Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	20	5	20	20
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	10	10	10	10
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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